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A COMPARISON OF THE MANAGERIAL CHARACTERISTICS OF MID-GRADE NAVY UNRESTRICTED LINE OFFICERS

by

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A Comparison of the Managerial Characteristics of Mid-Grade Navy Unrestricted Line Officers

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ABSTRACT

The Navy currently has a fully fledged occupational database for all enlisted ratings in pay grades E-1 through E-9 but no complementary, comprehensive database for its officers. There are several reasons for this, including the Navy's desire that its line officers' responsibilities not be too narrowly defined. The Navy wants its officers to be well-versed in many areas, ready and willing to take on new and challenging assignments. Another reason is the Navy's focus on the military leader rather than the military manager. Both aspects are part of the professional naval officer, however, and should be given equal weight in the occupational research arena. The purpose of this thesis is to examine the managerial characteristics of mid-grade Unrestricted Line officers to determine whether there are discernible differences by designator and pay grade. It is hoped that defining these differences and similarities will be of value in managing job classification, staffing qualifications, training requirements, and job performance of Navy officers.

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I. INTRODUCTION

A. BACKGROUND

The traditional view of a naval officer is one of an individual who is well-versed in many areas and readily adapts to new and challenging duties. In the earliest days of the U.S. Navy, its founding father, John Paul Jones, deemed the following as requisite qualifications for a naval officer:

> It is by no means enough that an officer of the Navy be a capable mariner. He must be that, of course, but also a great deal more. He should be as well, a gentleman of liberal education, refined manner, punctilious courtesy and the nicest sense of personal honor. He should not only be able to express himself clearly and with force in his own language, but he should be versed in French and Spanish....

Embodied within that quote are both personal traits and job characteristics, both of which have a place in the realm of occupational research. Indeed, when analyzing occupational requirements, it can be difficult to separate the job from the man or woman filling it. It is not enough to determine the qualities of a leader, however. In today's complex officer establishment, analyzing the occupational requirements of jobs performed by military men and women can provide the type of useful data long available within the civilian community.

In civilian job analysis, individual companies use occupational data for self-evaluation to determine job design, job classification, recruiting methods and goals, staffing qualifications, training requirements, performance appraisal and pay, and performance management. In the military, the Army, Navy, and Air Force have historically centered the thrust

of their occupational analysis on the enlisted community, where the enlisted rating system provided fairly clean demarcation lines for systematic occupational research. The results of their task-based occupational surveys are used in training, advancement, and community management decision making and are regularly updated, resources permitting. There is only limited complementary systematic surveying of the officer communities, however.

Currently the Army Occupational Survey Branch is the only military command which has a comprehensive officer occupational database. The Air Force Occupational Measurements Center develops and administers officer task-based surveys upon request from an interested agency or command. The Navy's organization, the Navy Occupational Development and Analysis Center (NODAC), used to operate in a similar fashion, but in 1983, the Navy's Inspector General levied the requirement for development of a comprehensive officer occupational database to assist in manpower management. Since it will take many years to obtain occupational data on all Navy designators with task-based surveys, NODAC developed an interim general managerial survey. It based its Officer Survey Instrument (OSI) on a validated civilian survey instrument, the Professional and Managerial Position Questionnaire (PMPQ) (Mitchell and McCormick, 1976). The OSI was mailed to more than 10,000 naval officers and has a usable return rate of over 70 percent. This thesis proposes to take a slice of the survey returns and examine them for similarities and trends in managerial responsibilities within the largest of the officer communities, the Unrestricted Line (URL). This community is

composed of "officers of the line of the Regular Navy and Naval Reserve who are not restricted in the performance of duty." (NAVPERS 15839)

B. HYPOTHESIS

The first hypothesis of this thesis is that there are commonalities among the managerial responsibilities of URL officers which transcend the major difference: that the General Unrestricted Line (GENURL) officers are predominantly female and land based while the URL warfare officers are primarily male and sea/shore based. The foundation for this hypothesis lies within the naval officer personnel management system, which classifies both officers and the billets they fill. The managers of the overall URL community maintain that a certain level of commonality exists among the URL subset designator communities– 1100 (GENURL), 1110 (Surface), 1120 (Submarine), 1130 (Special Warfare), 1140 (Special Operations), 1200, 1210, 1220, and 1230 (Material Professional), 1310 (Pilot), and 1320 (Naval Flight Officer)– and has affirmed this commonality through its billet designation process.

In the billet designation process, all naval officer billets are assigned a designator code to assist in officer assignment. If a billet is coded with a 1000 designator, it is a URL officer billet which "may be filled by an appropriately skilled and experienced officer," which would include all of the communities above; if it is coded 1050, it "requires an officer qualified in any of the warfare specialties (LT and above)," which may preclude a GENURL officer from filling it; and if it is specifically coded 1110, 1120, 1130, 1140, 1210, 1220, 1230, 1310, or 1320, the billet technically requires a specific warfighting skill (as well as Material Professional

qualifications for 1210, 1220, or 1230 billets). The word "technically" is used because a billet designator other than 1000 indicates the preferred (or optimal) designator to fill the billet. If no such qualified officer is available to fill the billet, it may be "gapped" (left vacant until a relief officer is found), the current officer may be extended in the job until a relief is available, or the billet could be offered to another community to fill.

The second hypothesis of this thesis is that there are managerial elements which differ by pay grade and help support the need for the current rank structure. Civilian literature documents differences in human, technical, and conceptual skills practiced by lower-, middle-, and upper-level management. This thesis will document some of the different roles exhibited by military managers by examining occupational data on officer demographics and managerial responsibilities. Identifying community and pay grade similarities among the five major groups of URL officers can provide useful information for future billet classification, leadership and management training, and officer community management.

C. SCOPE

In order to narrow the scope of this analysis, data from mid-grade (O-3 through O-5) URL respondents in designators 1100, 1110, 1120, 1310, and 1320 will be examined. Pay grades O-1 and O-2 were omitted because each of the designators has distinctly different training pipelines and assignment patterns for ensigns and lieutenants junior grade before they assume full-time job duties. The 1130, 1140, and 12XX officers will

not be included in the analysis because they did not fully meet NODAC's required return rates for representative samples.

II. BACKGROUND AND LITERATURE REVIEW

A. DIFFICULTIES IN DEFINING MANAGERIAL JOBS

The data analyzed in this thesis were extracted from the results of a navy officer occupational survey sent to military managers in the Summer and Fall of 1988. The Officer Survey Instrument (OSI) was based on a civilian survey, the Professional and Managerial Position Questionnaire (PMPQ), developed by Drs. Ernest J. McCormick and Jimmy L. Mitchell. In his doctoral thesis, Mitchell (1978, p. 1) discusses a dichotomy present in both civilian and military occupational research:

> It is an interesting and somewhat contradictory phenomenon that we understand the most about the relevant variables associated with basic blue collar jobs and understand the least about the executive, management, and professional positions which have the greatest influence on our economy, welfare, government, and social institutions.

Mitchell states that there are many reasons for this phenomenon, including differences in duties over time, differences from job to job, and the nondescriptive and nonspecific nature of executive job titles. Another problem involves the perpetual debate between the roles of manager and leader.

One reason for the blurred distinction between the roles of manager and leader and the functions of management and leadership is the widely differing views on where the demarcation lines should be drawn, both in tasks performed and skills developed. Massie (1981, p. 6) states that

> Leadership involves personal qualities which enable one person to induce others to follow....Styles of leadership are important to the study of management, but management is a more comprehensive

> concept than leadership. Development of a manager can be achieved through academic study. The essence of leadership is interpersonal and action oriented, and therefore can best be developed in practice.

Zaleznik agrees that leaders influence the actions and thoughts of others but adopts the position that leadership and management functions co-exist in a potential Jekyll-Hyde relationship. While leaders are entrepreneurs, risk-oriented, and motivated to shaping their own destiny by pursuing new ideas, managers are "conservators and regulators of an existing order of affairs with which they personally identify and from which they gain rewards." (Zaleznik, 1977, p. 74) Nurturing the growth of one function may inhibit the development of the other.

Foote (1980, p. 52), in the best military tradition, believes that people manage inanimate objects, but command or lead people:

> We manage resources: funds, buildings equipment, furnishings, programs, and projects. We plan for and scrutinize their use; we adjust along the way to make sure the use is appropriate and the rate of use is logical....We manage people in the sense that we manage the acquisition and utilization of their skills and their experience. We further develop these attributes with schooling, training, and use. We do not manage their motivation, their productivity, their ambitions, nor act as caretakers of their values. These become the purview of the leader lurking within the breast of any highly skilled and concerned manager. Manager-leader roles are not mutually exclusive...

Perhaps the best summation of the interwoven roles of leader and manager is made by McDermott (1983, pp. 56, 61), who believes that "mindless leadership is as detrimental as heartless management." He views leadership and management as two arms working together in a balanced, coordinated manner to successfully manipulate a corporate body, with both arms being equally developed. This intermingling of roles has come to epitomize the hyphenated leadership-management function,

a concept which evolved over time. There have been many contributors to this evolution, some of whom are recognized in Part B.

B. EVOLUTION OF THE MODERN MANAGER ROLE

1. Arthur Fayol

Arthur Fayol was one of the pioneers in the study of management and is considered the founder of the classical management school. He was the first to categorize management activities as a series of five basic functions: planning, organizing, commanding, coordinating, and controlling. Stoner and Wankel give the following definitions of those functions:

- Planning– devising a course of action that will enable the organization to meet its goals
- Organizing– mobilizing the material and human resources of the organization to put the plans into effect
- Commanding– providing direction for employees to get the optimum performance from them
- Coordinating– ensuring that resources and activities are working harmoniously to achieve desired organizational goals
- Controlling– monitoring activities to ensure they are properly completed (Stoner and Wankel, 1986, p. 33)

One of the problems with Fayol's descriptive functions is the overlapping of the activities which comprise them. Welsh (1981, p. 43) describes the process of planning an organization's workloads in terms of three types of work: controllable (fixed and routine tasks), semi-controllable or semi-fixed, and uncontrollable (no freedom over the sequence and timing of activities). His methods of dealing with peak workload conditions involve increasing the time available for work (working shifts or

overtime, employing temporary staff, postponing other routine work, or minimizing work disruptions), decreasing the time required for work (changing work methods or steps, motivating people do more, or obtaining extra or better equipment), or decreasing the work to be done (prioritizing workload, sending work out, or redesigning the job sequence) (Welsh, 1981, pp. 53–54).

Examining these options reveals that planning and scheduling have blurred lines of separation from the other four Fayol functions of organizing, coordinating, controlling, and commanding. This was a problem that subsequent authors found not only with the Fayol framework but with most definitions of a manager's functions. Furthermore, later authors felt that additional functions should be broken out as key duties.

2. Chester Barnard

In 1938, Chester Barnard published *The Functions of the Executive*, which identified three major management functions:

- providing a system of communication
- securing essential efforts
- formulating and defining purpose

Barnard's system of communication was predicated on the concept that determining where the necessary lines of communication are in an organization helps form the organization's structure by establishing where the executive positions should be located. Identifying the executives who will fill the positions provides the people who are to act as the means of communication (Barnard, 1938, p. 219). In addition to the formal lines of

communication, Barnard recognized the need for and use of an informal executive system of communication. Its purpose was

> the communication of intangible facts, opinions, suggestions, [and] suspicions that cannot pass through formal channels without dissipating dignity and objective authority, and without overloading executive positions.... (Barnard, 1938, p. 225)

Barnard's second management function dealt with attracting prospective employees through recruiting, proselytizing, and hiring them and then invoking a system which would result in the desired type and level of work performance. He proposed that one could achieve specific behavior through the persuasive method of changing subjective employee attitudes and by offering objective inducements. The incentives could be specific and material in nature or more general and intangible, such as a benevolent corporate attitude (Barnard 1938, pp. 141-142).

The third of his management functions dealt with defining objectives and planning how they would be accomplished and who would accomplish them. Barnard viewed each executive as carving off that part of the corporate objective which pertained to him or her and planning how to achieve it. This concept is rather generic and not as fully developed as Barnard's other two management functions.

Barnard's real contribution to the evolution of the modern manager was his inclusion of communication as a key function. Subsequent authors have differed in their opinions of where communication fits within the management process. Glover (1958) implied it was a subset of organizing, Allen (1964) viewed it as an activity within the function of management leading, and Massie (1981) defined it as a separate

management function. While there may not be a consensus on where communication fits in the management spectrum, all of the management readings highlighted its importance, perhaps Mintzberg most of all.

3. Henry Mintzberg

In 1973, Mintzberg published *The Nature of Managerial Work*, a seminal work based on actual observation of managers' working habits and performance of duties. He derived ten managerial roles from his research and fitted them into three different categories of behavior—interpersonal, informational, and decisional.

a. Interpersonal Roles

- Leader—Hires, fires, evaluates, trains, and motivates subordinates.
- Figurehead—Performs routine duties of a social or legal nature required by the manager's status within the organization.
- Liaison—Networks outside the vertical chain of command either within the organization or externally.

These roles are derived from a manager's positional authority within an organization and involve interpersonal associations with co-workers and outsiders. Mintzberg's management associates validated his findings with work of their own.

The role of leader closely parallels the previous results of Fayol and Barnard. The figurehead role highlights the social duties required by a manager's positional status. Stewart (1967) found that managers incurred two types of social obligations—entertaining external visitors or customers and socializing with internal peers and subordinates. The amount of socializing involved was a product of the type of organization the manager worked for and the type of job held.

Brown (1979) discusses the importance of community involvement. It has a twofold effect—highlighting the organization as a prospective employer and building support for the organization's projects and goals within the local community. Furthermore, he feels it is the duty of a good citizen to become involved in community initiatives.

Kotter (1982) advances the concept of managerial networking on a large scale. The network is based on managers' personal agendas and can encompass outsiders; their bosses' bosses; peers, peers' bosses, and subordinates; their subordinates; and their subordinates' subordinates. Networking is seen as a necessary action to procure the large volume of information required by managers.

b. Informational Roles

- Monitor—Gathers a wide range of information from internal and external sources to further his or her understanding of the organization and its environment.
- Disseminator—Transmits information gathered to other members of the organization.
- Spokesperson—Represents organizational plans, policies, and ideas both internally and externally.

The informational roles are of paramount importance in Mintzberg's work because of his discoveries regarding managerial communications. Mintzberg found that American managers spend an average of 78 percent of their time in verbal exchanges of information. Because much of this information is not stored on hard-copy media, managers are responsible for ensuring their information is passed to the appropriate people. (Mintzberg, 1975, p. 52)

Allen (1964) provides an excellent discussion of the vertical and horizontal lines of communication within organizations. Managers funnel requests, ideas, and suggestions forward, acting as traffic cops in deciding what information will pass and when it will pass. If necessary, they supplement or reinforce the information received from subordinates before passing it upward. Managers must also channel information downward to their subordinates. This information helps the subordinates plan their own activities, based on the needs and plans of higher management. Copeland (1952, p. 29) calls this role "the man in the middle" in discussions similar to Allen's. He also expands on the relationship among middle managers. Much of their communication is to resolve those problems which can be handled on an interdepartmental level. Those which require higher-level policy decisions will be passed upward.

c. Decisional Roles

- Entrepreneur—Initiates actions to facilitate innovations and improvements within the organization.
- Resource Allocator—Allocates or approves authorization of time, money, people, equipment, and other organizational resources; designs the organizational structure which will handle unit resources.
- Disturbance Handler—Takes action to deal wih unexpected situations.
- Negotiator—Persuades or negotiates preferred courses of action, either internally or externally.

According to Mintzberg, entrepreneurs use information and new ideas gathered through their monitor role to improve their organizations. This role is more prevalent in the private sector than in the public sector. Lewis (1980, p. 9) characterizes a public entrepreneur as one who

"creates or profoundly elaborates a public organization so as to alter greatly the existing pattern of allocation of scarce public resources." Massie (1981) states that the difficulties in public entrepreneurship are the number and complexity of procedural controls imposed on agencies to ensure honesty in government. In nonprofit organizations, superior performance is often equated to how well the procedures are followed. Askew (1989, p. 40) offers some cautionary words for the organization of resources, however:

> Organization is not to be taken lightly. With too little organization you will be turned and tossed like a rudderless ship; with too much, you may lose sight of your goal, waste resources, increase complexities, frustrate your personnel, and stifle progress. Too much organization can bring on the Rock of Gibraltar syndrome: solid, stable, interesting, pleasant to observe and study, and pretty damned unproductive.

The role of disturbance handler can denote both poor management practices and changes in a dynamic environment. Mintzberg (1975, p. 57) states that "disturbances arise not only because poor managers ignore situations until they reach crisis proportions, but also because good managers can not possibly anticipate all the consequences of the actions they take." Drucker (1967, p. 942) differentiates between unexpected occurrences and the recurrent crisis which he maintains is "simply a symptom of slovenliness and laziness" brought about by "a lack of system and foresight." Even if one can stamp out the bad management practices, the role of disturbance handler remains a valid concept for dealing with unanticipated change in both the internal and external organizational environment.

Mintzberg's final role is that of negotiator. In his work, he stresses the role of negotiator in the context of labor relations. Miner (1978) differentiates between bargaining, which he feels is a coordination activity within the organization, and negotiation, which involves persuasive interchanges crossing external organizational boundaries. Once managers cross the external boundaries, they segue into representing their organizations' "constituency" and become spokesmen.

Mintzberg admits that his ten roles are as interwoven and inseparable as Fayol and Barnard's management functions were. It is probably one of the difficulties of definitive management work which will never be totally resolved. Having discussed the development and roles of civilian managers, it is now important to review the rise of military managers and highlight possible differences between them and their civilian counterparts.

C. THE MILITARY MANAGER

In his book *The Professional Soldier* (1960, p. 9), Morris Janowitz discusses the "narrowing skill differential" between the military and its civilian counterparts. During the Civil War, 93.2 percent of the combatants were concentrated in "pure military" occupations. By the end of the Korean War, this percentage had fallen to 28.8 percent in the Army, and even lower in the Air Force and Navy. The major reason behind this development was the increasingly complex level of technology available to the military. As the services became more mechanized, there was a surge in military specialities which had equivalent civilian occupations.

Another reason for the narrowing skill differential was the changing role of the military fighting forces. The development of the destructive power of nuclear weapons decreased the potential and imminence of major armed conflicts. Janowitz calls the new role of the military the "constabulary concept of the management of violence." As part of this process,

> the military commander must become more interested and more skilled in techniques of organization, in the management of morale, and negotiation. This is forced on him by the requirements of maintaining initiative in combat units, as well as the necessity of coordinating the ever-increasing number of technical specialists. Furthermore, the military commander must develop more political orientation, in order to explain the goals of military activities to his staff and subordinates. He must develop a capacity for public relations, in order to explain and relate his organization to other military organizations, to civilian leadership, and to the public. (Janowitz, 1960, pp. 9-10)

This sounds remarkably similar to Mintzberg's roles for the civilian manager. The dilemma that both Janowitz and others raise is how a balance should be struck between "the military technologists, the heroic leaders, and the military managers." Janowitz (p. 424) gives this job of maintaining the delicate balance to the military managers because of their education and better developed administrative skills. He feels the technologists get caught up in sophisticated weapons' capabilities while heroic leaders want to maintain "conventional military doctrine." Neither is focussed on the political consequences of their respective actions.

Lyons and Knott see this triumvirate of duties as multiple personalities encountered in the Unrestricted Line (URL) officer. They believe the typical naval officer is one who must be skilled in a warfare specialty or

area of specialization but also as a general manager. Lyons and Knott state that

> In general, naval officers are technically prepared to solve problems encountered in their specialties. Managerial skills, however, must be learned informally from the administrative responsibilities associated with duty assignments. (Lyons and Knott, Naval Postgraduate School Report, 1985, p. 17)

The managerial skills are to be learned through jobs of increasing responsibility that appear in the career paths for the five designators (1100, 1110, 1120, 1310, and 1320) discussed in this thesis. These jobs are the "big five" of division officer, department head, executive officer, commanding officer, and commanding officer of a major sea/shore command. Between these job assignments, officers are eligible to attend professional military education and serve in staff positions where they should be honing the political skills which Jesse (1972) believes are necessary.

In his doctoral thesis, Jesse traced the historical evolution of the upper military echelon's professional skills. Based on the historical evidence and interviews with both former service chiefs and high-ranking civil servants, he concludes that, in general, high military officers now have a broader range of advisory responsibilities. When offering their military expertise, these officers must have some understanding of the domestic and international political, economic, social, and psychological ramifications of their advice on national security (Jesse, 1972, p. iv). If military officers are bent on a career in the Armed Forces, it seems expedient that they and the military establishment give some weight to the early development of their managerial skills. Yet, the predominance of

literature available on the military officer at large seems to focus almost entirely on the leadership aspect. Determining which skills should be emphasized at different points in a professional career is a problem in the civilian community, as well, and will be discussed as "the management dilemma."

D. THE MANAGEMENT DILEMMA

1. Review of Previous Studies

In a review of managerial studies which spanned more than 30 years, Hales (1986) came to several general conclusions regarding managers' duties.

- Managers mold their jobs through personal choice of which duties they emphasize, their selected methods of performance, and which duties they try to negotiate away.
- Managerial work is affected by function, management level, organizational type, structure, and size, and the environment.
- Study findings differ due to the diversity of jobs categorized as managerial, the choice of jobs studied, and the study method used (diary entries, structured questionnaires, or participant observation).

2. Managerial Differences by Organizational Level

One of Mintzberg's findings in his study is that even though a large proportion of managers' work is unstructured and unplanned, all managers have some regular, ordinary duties to perform. Mintzberg further maintains that there is a core of common tasks across all managerial levels, but managerial levels differ in the amount of time spent on these common activities. These findings are corroborated in a 1965 study of managers by Mahoney, Jerdee, and Carroll (cited in Allan), and a 1981 paper by Allan on the work of New York City government managers. In

addition, Allan found that higher levels of management perform substantially more activities rated important to their jobs.

In a broad-based study, Katz (1974, pp. 91-94) defined three types of skill functions performed by effective managers:

- Human skills– the executive's ability to work effectively as a group member and to build cooperative effort within the group he or she leads.
- Technical skills– an understanding of, and proficiency in, a specific kind of activity, particularly one involving methods, processes, procedures or techniques....It involves specialized knowledge, analytical ability within that specialty, and facility in the use of the tools and techniques of the specific discipline.
- Conceptual skills– the ability to see the enterprise as a whole; it includes recognizing how the various functions of the organization depend on one another, and how changes in any one part affect all the others...

Katz further states that while it is difficult to separate these three skill areas into distinct entities, the importance of each type of skill is distinctly different across management levels.

a. Technical Skills Performance

These skills are most important at the lower organizational levels. As managers become more senior, they should place this type of activity in the hands of their subordinates. Allen (1973, p. 60) proposes an interesting "Principle of Technical Priority" which works against delegation of technical skills, however. He believes that "when called upon to perform management work and technical work during the same period, a manager will tend to give priority to technical work." His reasons are threefold.

- Technical work involves hands-on work and people prefer doing things to concentrating on mental activities.
- Managers who have come up through the technical ranks may feel more comfortable doing work they are more familiar with.
- Managers who are technical experts may become annoyed at the lack of expertise evinced by those subordinate to them.

b. Human Skills Performance

Katz believes that effective human skills are necessary at every management level and cites separate studies indicating their importance to lower, middle, and upper management. He states that it is most important at the lower levels, however, because those managers have the most direct contact with their subordinates.

c. Conceptual Skills Performance

This skill rapidly increases in importance as the manager becomes more senior. Katz believes that having low human and technical skills is a survivable situation for upper management if they have subordinates who excel in those areas. Lack of conceptual skills endangers the existence of the organization because it affects organizational structure.

3. The Military Dilemma

The military has yet to determine the best mixture of skills at different pay grades. It continues, for the most part, to develop the "multiple personality" officer while measuring the management spectrum against some unofficial yardstick. Schulze and Scharfen (1982, p. 36) quote the comments of retired Brigadier General J. D. Hittle, former Assistant Secretary of the Navy for Manpower and Reserve Affairs, as saying "It's high time to get back to solid, good old principles of

leadership. For all too long, the magic-carpet ride to higher rank has been along the management route." McDermott (1983, p. 58) quotes another general as saying "We have drifted too far toward management." These types of comments reflect the military's continuing tug-of-war where leadership and technical (tactical) skills separately and jointly compete against management.

It is easy to see the difficulty in juggling the different faces of officership in a peacetime environment. In another viewpoint, Shipman (1986) discusses his dissatisfaction with the emphasis placed on administrator skills over flying skills and applauds the creation of the Aviation Duty Officer designator. When there is no enemy to subdue with tactical prowess, upper military management may find it feasible to take the Copeland approach to management selection:

> The problem of finding technical specialists sufficiently competent in administration to function effectively as executive lieutenants [department heads] is a very real one. Among technical specialists administrative ability is rare, and certain types of technical specialists have little regard for such mundane nuisances as budgets and time schedules. Sometimes, in selecting a department head, a choice has to be made between a scientist who is not an administrator and an administrator who is not a scientist. In such a situation my experience indicates that the administrator is likely to be the better bet. (Copeland, 1952, pp. 35–36)

In the past five years, the Navy has tried three times to tinker with the skills ratio required by the Unrestricted Line. Each attempt resulted in a deviation from the traditional career pattern which stresses military leadership as the path to promotion. Only one of those attempts can be considered successful.

a. The General Unrestricted Line (GENURL)

The GENURL community is a subset of the URL and is largely composed of women officers who do not specialize in a warfare area. The proposal was made to split the community into generalists and specialists. Generalists would acquire a subspecialty in any career field open to them but still continue the traditional climb in leadership authority toward the goal of becoming commanding officers. Specialists would concentrate exclusively in specific subspecialty fields and their promotion potential would not hinge on the traditional leadership track.

The original thrust behind creating a dual-career track for GENURL officers was the lack of executive and commanding officer (XO/CO) billets open to their community. This made following the traditional URL career path difficult and had the potential of making GENURL officers less competitive with the other URL communities. Although the dual track seemed viable when proposed, the GENURL community manager (CDR Cummings) cited four reasons for its failure.

- Lack of recognition of this nontraditional career pattern by the warfare communities.
- Lack of lobbying for the dual-career track by the GENURL community.
- Lack of quality officers entering the specialist track.
- The subsequent increase in XO/CO billets which could be filled by GENURL officers.

b. The Aviation Duty Officer (ADO)

Another example of an attempted break from the traditional URL career pattern was the creation of a Restricted Line designator as a

career offshoot for navy pilots. The ADO designator was created under the auspices of Secretary of the Navy John Lehman. Pilots with the new designator (1540) would not follow the traditional aviation leadership track but would continue to utilize their aviation skills in flying billets. Although this community still exists, accessions have been halted pending further review of the designator's viability.

The Aviation Community Manager was cautious in his remarks concerning the future of the ADO community. It is this author's personal opinion that unless there is an extremely critical shortage of navy pilots, the ADO community is likely to fold. Discussions with navy pilots revealed an attitude similar to the hoary chestnut that those who can't do, teach. The pilots talked to felt that those who can't command become Aviation Duty Officers. Since the ultimate goal of successful URL officers is command, the traditionalists are somewhat derisive toward the flying ADOs. This makes their continued viability tenuous at best.

c. The Material Professional (MP)

The creation of the Military Professional designators (12XX) was another John Lehman initiative to combat the Navy's problems in acquisition and procurement. It provides the opportunity for warfare officers to change tracks at the O-5 level and specialize in program management. Unlike the previous changes discussed, the success of this designator was heavily underwritten by the designation of a significant number of flag MP billets.

Bunting (1986, p. 70) discusses the climate in 1986 which was conducive to officers changing designators: "collisions at sea,

accidental groundings, fires, and the death of a sailor while in a brig" derailed seven promising careers. Material Professionals not only give up the stressful operational command route but also acquire skills which will be highly marketable upon their retirement.

Bunting states that two admirals who requested anonymity are concerned with this new career path, however. They believe that alternating sea and shore tours keep officers current in the needs of the Navy. Changing this pattern may have deleterious effects on Navy readiness. He quoted one of the admirals as saying: "You might have the most efficient procurement system in the world, but what they're buying might not be what the fleet needs. We need to keep those links and not create two navies—the managers and the warriors."

E. SUMMARY

- Early management readings downplayed the importance of leadership and communication functions performed by managers.
- After the communication and leadership functions were introduced, there was difficulty in meshing leadership and management functions. This resulted in such descriptors as leader-manager and management-leading.
- Management functions are nested together, making them difficult to separate when describing managerial activities.
- Occupational studies of managers have been further hampered by ambiguities in job content and job behavior.
- The variety in managerial jobs and management activities increases the difficulty in determining the optimal level of human, technical, and conceptual skills required by managers.
- The birth of the military manager was directly related to the decreased probability of engagement in major armed conflicts.

- The lack of literature regarding military managers is a by-product of the traditional emphasis on and romantic characteristics of the heroic military leader.

- Previous efforts by the Navy to develop nontraditional management career paths for the URL have met with mixed support by both the military members and the military leaders.

III. METHODOLOGY

A. SURVEY BACKGROUND

1. Survey Construction

The Officer Survey Instrument (OSI) was based on a validated civilian survey, the Professional and Managerial Position Questionnaire (PMPQ) developed by Drs. Ernest J. McCormick and Jimmy L. Mitchell (Purdue University, 1976). The Navy Occupational Development and Analysis Center (NODAC) received permission from the authors to modify the PMPQ for use in a designator-wide survey of officers in pay grades W-2 through O-6. The Navy instrument includes four sections:

- SECTION A: Billet Information
- SECTION B: Personal and Job Background Information
- SECTION C: Management and Professional Responsibilities
- SECTION D: Leadership

a. Billet Information

This section is filled out by the command administrative or personnel office before the billet incumbent completes sections B through D. Information is requested on the billet the incumbent is actually filling. This is important because the manpower authorization documents which contain the requested information may lag behind the current command situation. Information requested includes a ten-digit ship/station activity code which is used to identify the command, the billet designator code, the billet pay grade, the billet Primary and Secondary Navy Officer Billet

Classification (NOBC) codes, the billet Additional Qualification Designation (AQD) code, the billet Primary Subspecialty Code, and current command status (location and deployed status).

All of these codes provide amplifying information about the billets authorized to the command. The NOBC codes provide a general description of the duties assigned to the billet. It is mandatory that all billets have a primary NOBC; the secondary NOBC may be assigned to identify additional duties not described elsewhere. The billet AQD generally describes a requirement for skills and knowledge needed to perform the duties and/or functions of a billet not covered by the billet designator, grade, NOBC, or subspecialty. It usually identifies the need for an officer who has attained special qualifications through training and/or experience. The billet subspecialty code identifies jobs which require the officer to have advanced education, functional training, or significant experience in various fields and disciplines.[1]

b. Personal and Job Background Information

Section B contains a wide variety of personal information about the officer completing the survey. It includes the officer's source of commission and his or her length of time in current pay grade, current job, and the Navy. Educational information includes the highest degree

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[1]The definitions for all of these codes were taken from the *Manual of Navy Officer Manpower and Personnel Classifications* (NAVPERS 15839). This manual describes the set of codes used to structure the Navy Officer Occupational Classification System (NOOCS) and identifies the organizations responsible for managing the system.

completed, primary fields of study for all degrees completed, and level of service college(s) attended. Job background information includes number and type of personnel working for the officer and number of hours worked while engaged in various activities.

c. Management and Professional Responsibilities

Section C contains a series of 30 two-part questions which cover various management functions. Part A asks the officer to rate (from zero to nine) to what extent each management function is a part of his or her current job. In Part B the officer rates the typical complexity (from zero to nine) of each function.

The odd-numbered responses on the complexity scale are anchored with examples of job duties which equate to the specific level of complexity. The PMPQ had civilian job examples; the OSI has navy job examples. For instance, the Navy example of a moderately complex judgment involving people is "selecting an aircrew for a special mission." In addition to the two-part questions, there are questions on watch-standing responsibilities, physical fitness, professional development and current job title(s).

d. Leadership

The questions in Section D were developed by the Leadership and Command Effectiveness Division of the Naval Military Personnel Command (NMPC-62). They include questions on the percentage of time spent performing leadership, management, and technical duties; the type and frequency of interaction an officer has with his or her superiors,

peers, and subordinates; and eight job competencies identified in the Leadership Management Education and Training (LMET) curricula.

2. Survey Sample

The sample to be surveyed was stratified by pay grade and designator. Over 10,000 surveys were mailed to officers at 2,855 commands in July 1988. Officers in a training or otherwise transient status were not included in the sample. There were 7,381 usable surveys returned before the survey was closed out in December 1988. Not all of the stratified cells contained the desired return rates for an adequate sample. NODAC maintains a breakdown of the sample returns.

B. THESIS SAMPLE

The sample selected for use in this thesis is comprised of 981 Unrestricted Line (URL) officers in pay grades O-3 to O-5. These pay grades were selected because it was felt that they represented the middle management in the Navy. Lumsden (Gordon, 1987, p. 18) describes civilian middle management as: "people who work below a policy-making level, but who have some say in how policy will be implemented and considerable involvement in carrying out the implementation." Gartaganis (1984, p. 4) focusses on the personnel responsibilities of mid-level managers, stating that they

> ...hold intermediary positions between supervisory and top management. Their specific duties and job titles depend largely on the way the particular organization they work for is set up, but they would always be in charge of several junior managers.

The Navy definition of middle management would fall somewhere in between the definitions proposed by Lumsden and Gartaganis. A

commander might be a commanding officer of one organization or a division head in another. While the lieutenants are just phasing into middle management, the commanders are phasing out into upper management. All of these officers may or may not have other managers working for them.

In Chapter I, the method of selection for the sample designators was discussed.[2] Five designators are included in the sample: 1100 (General Unrestricted Line), 1110 (Surface Warfare), 1120 (Submarine), 1310 (Pilot), and 1320 (Naval Flight Officer). For the purpose of this thesis, regular and reserve officers on active duty are combined within designators 1100, 1110, 1120, and 1310 (all NFO officers were augmented). In addition, the Surface Warfare designator (1110) includes seven officers in *training for Surface Warfare qualification* (designator 116X). Table 1 illustrates the breakdown of the thesis sample by designator and pay grade.

The original survey mailout was stratified only by designator and pay grade. As such, the data provided in Table 2 on the breakdown of the sample by activity type are not meant to imply any representation of the population as a whole. They are provided for information purposes.

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[2]Chapter I, page 3, paragraph 1.

TABLE 1

OFFICERS IN SAMPLE BY DESIGNATOR* AND PAY GRADE

	Pay Grade			
Designator	**O-3**	**O-4**	**O-5**	**Total**
1100	135	50	12	197
1110	86	43	32	161
1120	124	52	32	208
1310	110	60	51	221
1320	87	74	33	194
Total	**542**	**279**	**160**	**981**

*Note: 1100 = 1100 and 1105 officers
1110 = 1110, 1115, 1160, and 1165 officers
1120 = 1120 and 1125 officers
1310 = 1310 and 1315 officers
All 1320 officers were augmented

TABLE 2

OFFICERS IN SAMPLE BY PAY GRADE, DESIGNATOR, AND ACTIVITY TYPE*

	Activity Type				
	Ship	**Sub**	**Plane**	**Shore**	**Total**
O-3 Designator					
1100	1	0	11	123	135
1110	38	0	1	47	86
1120	2	65	0	56	123
1310	2	0	94	14	110
1320	7	0	46	34	87
Total	**50**	**65**	**152**	**274**	**541**

TABLE 2 (continued)

	Ship	Sub	Plane	Shore	Total
O-4 Designator					
1100	0	0	1	48	49
1110	15	0	0	28	43
1120	1	28	0	23	52
1310	5	0	41	14	60
1320	4	0	28	41	73
Total	**25**	**28**	**70**	**154**	**277**
O-5 Designator					
1100	0	0	0	12	12
1110	9	0	0	23	32
1120	1	20	0	11	32
1310	1	0	19	31	51
1320	4	0	7	22	33
Total	**15**	**20**	**26**	**99**	**160**
Grand Total	**90**	**113**	**248**	**527**	**978**

*Note: Ship = officers assigned full-time to surface vessels
Sub = officers assigned full-time to submarines
Plane = officers assigned full-time to aviation squadrons
Shore = officers assigned to all other types of activities (includes embarkable staffs, air wings, and other activities which might deploy)

C. STRUCTURE OF ANALYSIS

The analysis in this thesis will be divided into four main parts: comparison of billet and billet incumbent characteristics, incumbents' professional background, management functions performed, and hours worked.

1. Comparison of Billet and Incumbent Characteristics

a. Pay Grade

In order to determine how closely the billet incumbent characteristics and billet requirements are aligned, the officer's pay grade and designator will be compared to the billet grade and designator. Appendix A lists the comparison between officer pay grade and billet grade. If the officers are filling billets in grades lower than their pay grades, they are reflected in the "Lower" column; if they match, they are reflected in the "Same" column; and if officers are filling billets graded higher than their pay grades, they are reflected in the "Higher" column.

b. Designator

Appendix B compares the billet incumbent's designator with the designator assigned to the billet itself. "Invalid Desig." refers to invalid billet designators which are not listed in the *Manual of Navy Officer Manpower and Personnel Classifications* (NAVPERS 15839), while "Other Valid Desig." refers to valid billet designators which are not a match with the incumbent's designator. As previously discussed in Chapter I, URL officers may legitimately fill several types of designated billets which would be considered matches to their designators.[3]

- 1100 officers technically may only fill 1000-coded billets
- 1110 officers may fill 1000-, 1110-, or 1050-coded billets[4]

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[3]Chapter I, page 3, paragraph 2.

[4]Each of the warfare designators also has an additional designator to indicate an officer in training for warfare qualification. For 1110

- 1120 officers may fill 1000-, 1120-, or 1050-coded billets
- 1310 officers may fill 1000-, 1300-, 1301-, 1302-, 1310-, 1311-, 1312-, or 1050-coded billets
- 1320 officers may fill 1000-, 1300-, 1301-, 1302-, 1320-, 1321-, 1322-, or 1050-coded billets

c. Job Title

Survey respondents were asked to choose from a list of 654 job titles and select the one which most closely described their primary job. Space was allowed to select an additional primary job title if the respondent felt he or she had two primary jobs. The list of job titles was derived from the NOBC code titles listed in NAVPERS 15839. The two lists are almost mirror images in terms of title similarity but are organized differently.

Appendix C lists the results of the comparison. It reflects the percentage of officers who selected two job titles, the percentage of correct job title matches, the percentage of job titles which were matched to an associated NOBC code, the percentage of incorrect matches, and the percentage of invalid NOBC codes filled in by the incumbents' administrative personnel. For the purpose of this comparison, "associated" means one of two cases:

- The self-selected job title could be found under the same job title subheading as the correct match with the command-reported NOBC code.

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officers it is 116X, for 1120 officers, 117X, for 1310 officers, 139X, and for 1320 officers, 137X.

- The appropriate NOBC code to match the self-selected job title was in the same NOBC group (in NAVPERS 15839) as the command-reported NOBC code.

An example of the first case would be an officer who chose the job title of "Squadron Scheduling Officer" while the NOBC code indicates he or she is the "Squadron Operations Officer." Because both of those job titles fall under the subheading of "Ground Operations," they are considered an associated match. In the second case, the NOBC code filled in by the command falls within the same group as the NOBC which would match the incumbent's self-selected job title. This differs from the first case because many NOBC groups were broken down and listed under different job subheadings when the job title listing was derived.

An incorrect match indicates no alignment between the job title and NOBC code. Invalid NOBC codes were a missing response or a response which had less than four digits. In this case, less than four digits would not imply lead zeroes were missing from the response because NOBC codes between 0001 and 0999 are reserved for Medical Corps use.

2. Comparison of Professional Background

In comparing the officers' professional backgrounds, three areas will be examined: undergraduate field of study, highest educational degree completed, and professional military education completed.

a. Undergraduate Field of Study

Respondents were given a list of 163 major fields of study from which to select. In the case of a double major, they were forced to select the one response which best described their major. In order to analyze the selections made, responses were aggregated into 13 areas

similar to the survey subheadings: business/management, communications/language, education, fine and performing arts, health, history, mathematics and science, operations, philosophy/humanities, social and behavioral sciences, other professional fields (architecture, divinity, etc.) and other field of study (not on the list). Appendix D lists a comparison of the top three areas of study for each designator and pay grade. They will be compared to determine whether there are any trends in the educational backgrounds of the officers sampled.

b. Educational Degrees Completed

Appendix E lists the extent of the officers' higher education by level of degree completed. The levels will be compared by pay grade and designator to determine whether there are differences in educational levels within the URL.

c. Professional Military Education (PME)

URL officers are eligible to attend intermediate-level service colleges as lieutenant commanders and senior-level service colleges as commanders and captains. In addition, the Naval War College offers an off-campus program at several duty stations within the United States which is available to lieutenants and above. While these schools do not award educational degrees, they provide professional development opportunities for military officers. Completion of either level service college has recently become a requirement for selection to flag rank. Appendix E lists a comparison by pay grade and designator.

3. Comparison of Management Functions Performed

a. Overview

In his doctoral dissertation, Mitchell (1978) divided the PMPQ management functions into six basic categories:

- Planning and Scheduling
- Processing Information and Ideas
- Exercising Judgment
- Communicating
- Interpersonal Activities/Relationships
- Technical Activities

These categories will provide the structure for analysis of 28 management functions—20 from the original PMPQ instrument and 8 which are Navy-derived (Appendix G provides the OSI definitions for the 28 management functions). Each of the management functions will be analyzed with two techniques: comparison of the percentage of the sample performing each function and analysis of variance of the extent and complexity of performance.

b. Performance Percentage

This first technique will be used to determine whether there are any trends in the number of officers performing each management function. The performance percentage was derived by dividing the number of non-zero responses for each function by the total number of respondents. Because these management functions were two-part questions, a default was included to set both Part A, Part of Position, and Part B, Complexity, equal to zero if only one part of the question was marked

"Does not apply." In addition, if either Part A or Part B was left blank, both parts of the question were set equal to missing values.

Appendix H includes the percentage of officers performing each management function by each designator at the O-3, O-4, or O-5 levels. Appendix I contains the performance percentages for the aggregate O-3, O-4, and O-5 levels. This data will be used to help support the hypothesis that there should be minimal difference in performance percentages among the designators but a pattern of performance levels within the rank structure.

c. Analysis of Variance

Analysis of variance (ANOVA) will be used to test the two hypotheses that there are no differences in performance by designator but that there are differences by pay grade. Stated in statistical terminology, the null hypothesis to be tested is whether the five sample means (for designators 1100, 1110, 1120, 1310, and 1320) can be considered as coming from five populations having the same mean. This hypothesis will be tested three times (once for each pay grade). The second hypothesis to be tested is whether the three sample means (for pay grades O-3, O-4, and O-5) can be considered as coming from three populations having the same mean.

The ANOVA procedure used in this thesis breaks variance into two parts—between-treatment variation and within-treatment variation. Between-treatment variation is the variance of the sample means around the grand mean (summation of the sample means divided by the number of sample means). Within-treatment variation is a measure of

how much the observations within a sample vary. If the null hypothesis is true, then both the variation among the sample means and the variation within each sample mean reflect chance errors of the sampling process (Hamburg, 1987).

In order to use the ANOVA procedure, two assumptions must be made (Norusis, p. 257, 1987).

- Each of the groups must be a random sample from a normal population.
- In the population, the variances in all groups must be equal.

Appendix H lists the results of the three iterations of the designator null hypothesis. The values in the F column reflect the significance level of the F ratio (between-treatment variance divided by within-treatment variance) tested against the F distribution. The results which met the .05 or better statistical significance criterion are marked by a single asterisk. A double asterisk indicates a significance level between .06 and .10. Appendix H lists the results of the designator null hypothesis and Appendix I lists the results of the pay grade null hypothesis.

Both the designator and the pay grade null hypotheses are broken into two subsets: extent of performance (how significant is the function in the incumbent's current job) and typical level of complexity. Mitchell (1978) used the complexity scale to indicate a higher level of professional performance; that same connotation applies in the OSI. Individually, job incumbents may perform the same function but they can perform at different levels.

4. Comparison of Hours Worked

Number of hours worked can be a function of two factors: job requirements and individual working habits. As a result, it is difficult to determine the difference between necessity and preference. For the purpose of this study, it is assumed that the working hours reflect the job requirement. The range and frequency of number of hours worked varied widely, particularly between deployable and non-deployable jobs. The hours were tested twice, once as a continuous variable and once as an ordinal variable.

IV. RESULTS

A. BILLET AND INCUMBENT CHARACTERISTICS

1. Pay Grade (Appendix A)

a. Lieutenants (O-3)

The percentage of lieutenants filling billets in their own pay grade ranged between 70 and 83 percent by individual designator. GENURL officers had the greatest percentage of lieutenants in lieutenant commander billets; pilots had the lowest. Submariners had the lowest percentage of lieutenants in junior pay grade billets (W-2 through O-2), while surface warfare officers had the highest.

b. Lieutenant Commanders (O-4)

The percentage of lieutenant commanders filling billets in their own pay grade ranged between 70 and 88 percent by individual designator. Submariners had both the lowest percentage of lieutenant commanders in junior pay grade billets and the highest percentage in more senior billets. The GENURL community had the highest percentage of officers in lower pay grade billets.

c. Commanders (O-5)

The small sample of GENURL officers strongly affected this category. If they are deleted from the comparison, the percentage of commanders filling billets in their particular pay grade ranged between 90 to 94 percent. Only GENURL and surface warfare officers had commanders in captain billets.

d. Summary

Viewing the overall picture, it appeared that submariners (1120 officers) had the tightest control over officers filling billets with pay grades lower than their own and that, as a group, commanders were most likely to be filling billets in their particular pay grade. Given the fact that officers often move into a new promotion zone during a tour of duty, the match between incumbent pay grade and billet grade looked good.

2. Designator (Appendix B)

a. Lieutenants (O-3)

The submariners had the highest percentage (89.5 percent) of their officers in billets coded with their 1120 designator and GENURL had the lowest percentage (64.6 percent) in billets coded with the appropriate 1000 designator. GENURL officers were also filling the greatest percentage of billets coded with invalid designators and the greatest percentage of billets outside the realm of a designator match. At the lieutenant level, they filled Limited Duty Officer, Chief Warrant Officer, and other Restricted Line billets, as well as 1000 and warfare-coded billets. A recurring problem was the use of 1100 as an invalid billet designator. Only officers can be assigned that designator.

b. Lieutenant Commanders (O-4)

The GENURL officers once again had the highest percentage in invalidly designated billets. The submariners had the highest percentage of officers filling billets coded with their warfare designator and naval flight officers (NFOs) had the lowest. All of the O-4 "Other Valid Desig." billets filled by NFOs reflected 1320 officers filling pilot billets.

c. Commanders (O-5)

All 1120 officers were in submarine billets. The other three warfare communities had higher percentages of officers filling the 1050- and 1000-coded billets at the O-5 level than they had at the O-4 level. This indicated a wider spread of designators being filled at the more senior levels. Conversely, the GENURL community was highly concentrated in 1000-coded billets at the commander level (which may be a result of the small sample size).

d. Summary

- The submariners had the tightest control over the designator match. Almost all of their officers filled 1120-coded billets. At the same time, there were only two 1120 billets filled outside the submarine community.
- Almost all of the billets reflected in the 1320 "Other Valid Desig." percentages represented NFOs filling pilot billets.
- All of the billets reflected in the 1310 "Other Valid Desig." percentages represented pilots filling other aviation-related billets (NFO, Aviation Engineering Duty Officer (AEDO), or Aviation Duty Officer (ADO).
- The percentage of officers filling billets with invalid designators decreased as the pay grade level increased.
- The 1100 community filled the most diverse range of billets in the "Other Valid Desig." category.
- The most common mistake was the use of 1100 as a billet designator. The second most common mistake was an incorrect fourth digit in the billet code.

3. Job Title (Appendix C)

a. Two Jobs

More than 47 percent of the officers in the overall sample (n = 981) indicated they had two primary job titles. By pay grade, there

seemed to be a trend of less identification of two job titles as rank increased. By community, there were only two clearly apparent trends. Pilots most often indicated that they held two jobs. The reason for this was the inclusion of various types of pilot job titles (Attack, Fighter, ASW, ECM, etc.) within the job title list. Fifty-four percent of the pilots listed a specific pilot title as a primary job. An additional 16.7 percent listed a job which had flying-related duties (patrol commanders and flight instructors). Yet, only nine jobs in the entire sample had pilot NOBC codes assigned to the billets (one of which was filled by an NFO).

This anomaly is probably due to the overlapping in billet code identification. If the billet designator indicates the job requires a pilot and the Additional Qualification Designation (AQD) code indicates an Electronic Countermeasures (ECM) mission/pilot for an EA-6 aircraft, then one would assume the person filling the billet is performing the duties of an ECM pilot. If it looks like a pilot job by designator, and smells like an ECM pilot job by AQD code, does it need to be officially classified as such with a third code? That's a policy question that the billet classifiers should answer.

The NFO community was the first runner-up in identifying two job titles. The reason for this was less apparent than it was for the pilots, but many of the dual choices did reflect a flying-related job and a ground job. There was no clear trend among the remaining three communities and the sample as a whole had less than nine percent of its billets coded with secondary NOBC codes. This indicates a substantial difference between incumbents identifying the dual nature of their jobs

(the 47 percent mentioned above) and billet classifiers recognizing the job duality with two NOBC codes.

b. Correct, Associated, and Incorrect Job Titles

As a community, the submariners had the highest percentage of correct job title matches (a one-to-one correspondence between job title and NOBC code title) at each pay grade level. No other community exhibited a particular trend. By pay grade, there appeared to be a trend of increased ability to match the job title with the appropriate NOBC code as rank increased. There was no clear trend among the associated matches by either designator or pay grade.

The incorrect job title matches were not always black and white, but there had to be some cutoff measure established. If all of the NOBC code descriptions were scrutinized, several of the incorrect job titles would probably have some measure of association to the command-identified NOBC codes. With the exception of one NFO lieutenant commander who listed his or her job title as "Colon-Rectal Surgeon," it was apparent that respondents made a significant effort to find themselves amidst the six pages of job titles listed in the OSI.

c. Invalid NOBC Codes

The most significant problem with invalid NOBC codes was the number of missing entries (7.7 percent of the overall sample). Since the NOBC code is a mandatory item on manpower authorization documents, there should have been a four-digit code available for transcription to the survey. An additional 4.3 percent of the sample entries had an incorrect number of digits entered in the surveys and 3.7 percent had

incorrect four-digit codes. It is not known whether these codes were once valid and became obsolete or whether they were just incorrect.

There were a few trends noted in the job-matching trial. The first was that while there are certain job titles that are very recognizable, even some of those were mismatched. Several officers who listed themselves as executive officers were not in billets titled as such. One reason may be the creation of "XO equivalent" billets by manpower planners. Because there are not enough XO billets for officers who need that experience, several jobs are designated as being equivalent in responsibility. They do not carry the title but the officer is given credit for the AQD code in his or her personnel records.

Another trend noted was that there were several officers who gave themselves a singular job title as "Officer in Charge" but the records indicated a singular NOBC code of "Communications Officer, Ashore." This would indicate that there may have been an upgrade or downgrade of several billets in the communications arena which has not been reflected in the command documentation.

The final trend noted was that jobs dealing with project research, development, design, and management were probably the least correctly matched. This is not surprising because the titles given to those types of NOBC codes are very nebulous in nature. The commands having those types of billets may flesh out the job titles to make them more descriptive.

4. Summary

It is readily apparent from examining the job characteristics data that the submarine community has the tightest control over its billet classification and assignment processes. There could be several reasons for this. The first is a very tight career path which does not allow much deviation in the types of jobs held. The second is probably the smaller community size. It has approximately 5,000 officers compared to the surface warfare community (over 13,200) and the aviation community (over 19,800). The final reason may be the legacy of Hyman Rickover's influence in how the community was structured and is maintained.[5] There was also a trend toward better assignment and billet classification as the pay grade increased. This might be attributed to increased concern by the incumbents as to how their jobs are classified. Because the codes are an integral part of their service history, more senior officers may have a larger stake in ensuring the records are accurate and that they fill jobs commensurate with their rank. It may also be that the commands are more particular about coding the senior jobs to ensure they obtain officers with the appropriate background and experience level. Finally, it could be a by-product of the smaller sample size for the O-5 respondents.

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[5]Rickover was known as the Father of the Nuclear Navy. His method for ensuring the success of the submarine community was to get involved with and maintain control over almost every aspect of nuclear propulsion—design and construction, maintenance, safety procedures, fleet operations, and selection and training of the crews.

B. PROFESSIONAL BACKGROUND

1. Undergraduate Field of Study (Appendix D)

For all three pay grades, the heaviest concentration of the warfare officers' academic degrees was in mathematics and science. The submariners had the largest percentage of degrees in mathematics and science and the naval flight officers the lowest. When the GENURL community was added, it superseded the NFOs as having the lowest percentage of mathematics and science degrees.

The top second and third areas of study were social science and business/management for all except the GENURL officers. These two areas traded off by designator and pay grade within the warfare communities but were consistently the other top areas of study, with one notable exception. At the O-4 level, the submariners' second highest percentage was in the operations field.[6]

As rank decreased, the GENURL officers (a predominantly female community) had degrees more similar to those of their male counterparts. At the O-5 level, the top field of study was education, at the O-4 level it was mathematics and science, and at the O-3 level it was social science. The GENURL lieutenants mirrored their warfare counterparts in the top three fields (but in a different order) and were the only

---

[6]The operations fields of study are Command, Control and Communications, Intelligence, Operational Logistics, Operations Analysis, Operations Research, Space Systems Operations, and Other Operations Field.

GENURL pay grade to have business/management as one of the top three majors.

Gartaganis (1988) discusses trends in civilian education institutions' conferral of degrees. The pattern of the more recently commissioned officers (the lieutenants) having a similar representation in types of degrees across all designators coincides with recent civilian trends. The areas of study which the Navy has always sought from its male officers are now part of an androgynous trend in the civilian academic world.

2. Educational Degrees Completed (Appendix E)

At the lieutenant level, the GENURL community has the largest percentage of officers with advanced degrees (by almost double). As lieutenant commanders, it appears that three of the four warfare communities draw level with the GENURL community in terms of master's degrees. The submariners have a significantly lower percentage of master's degrees at the O-4 level but they close to within ten percentage points at the commander level.

The initial burst of master's degrees at the lower GENURL pay grade level is due to several factors. The first is that these officers have more opportunity earlier in their careers to attend postgraduate education. The second is the need for all GENURL officers to develop an area of specialization. Warfare officers have community qualifications by the ensign or junior grade lieutenant level, so GENURL officers must play catch-up. This reflects civilian labor force practice (Treiman, 1979), where women substitute formal education for job-specific experience. As

the GENURL officers become more senior, they have acquired experience and subspecialization, which may be why their attendance percentages level out.

3. Professional Military Education (Appendix F)

The lieutenants indicated very low percentages of completion for the off-campus program, but attendance is tied to duty location and ability to complete the program at night. It generally requires a three-year commitment, with each of the three core courses running from September through May.

At the O-4 level, the GENURL and NFO officers had the highest attendance percentages and they were about double that of the pilots' and surface warfare officers'. The submariners had no officers who had attended intermediate level professional military education (PME).

At the O-5 level, all of the communities had increased percentages of attendance for intermediate service colleges but a very low percentage of attenda e for the senior service colleges. Only four percent of the commanders had completed a senior level of PME, but they do have the option of attending a senior service college at either the O-5 or O-6 level.

The general pattern of low participation in PME documents the current problem the Navy faces in trying to comply with the Goldwater-Nichols Department of Defense Reorganization Act of 1986. A major provision of this act was the requirement for military officers to attend joint professional military education (JPME) and serve in a joint-duty billet as part of the promotion criteria for selection to flag rank. A 1988 GAO

report compared flag officer PME attendance levels across the services. Forty-five percent of the admirals had attended either intermediate- or senior-level service colleges and six percent had completed both. This did not compare favorably with the other services' 95 to 100 percent attendance for either level and 62 to 97 percent attendance at both.

The Navy has recognized the problems it has with PME and is taking action to increase its attendance percentages. The most recent Navy officers' professional bulletin (*Perspective*, November-December 1989) documents two of the communities' focus on JPME. The GENURL community unveiled a new career path chart with an amplifying note encouraging dual PME attendance whenever possible and the submarine community highlighted recent PME attendance figures. They reported that six officers attended senior-level JPME and eight attended junior-level JPME during fiscal year 1989. While these numbers are small, they have established a departure from the 1120 career path documented in the current edition (1986) of the *U.S. Navy Unrestricted Line Officer Career Planning Guidebook*. That publication shows submarine officer opportunity for one-time attendance of PME at approximately the 19-year service point.

4. Summary

In terms of undergraduate education, the lieutenants demonstrate the greatest homogeneity in their top three fields of study. As the officers pursue graduate-level education, the GENURL community takes the lead in acquiring master's degrees, but the percentages converge at the more senior levels. The same pattern is true for PME. The exception

to these patterns is the submarine community. While they have the highest percentages of technical bachelor's degrees, submarine officers have the lowest levels of postgraduate education and PME completion. Once again, this is no doubt a reflection of their stringent career paths and may be a holdover of the Rickover influence. A 1974 draft executive summary of a CNO Naval Officer Professional Development Study contained comments elicited from several current and retired three- and four-star admirals. Some of Rickover's comments (CNO study, 1974, pp. I-D-31, 32) were:

> You cite the inability to get top performers into the service colleges because they are in demand elsewhere. This proves minimal need of present service college instruction; your statement that service college graduates have not consistently been selected for promotion merely proves the point.
>
> You are correct in your assessment of my remarks before Congress that I agree with post graduate education for a limited number of naval officers. I positively do not agree from my experience, that wholesale application of post graduate education will produce a better officer corps...

Rickover's comments were generally less favorable than those from other contributors. The following excerpts from a few of those contributors provide additional viewpoints. They came from retired admirals VADM Charles B. Martell, ADM James S. Russell, and ADM John J. Hyland (CNO study, pp. I-D-ll, 13, 22), respectively.

> A broad base of graduate education is essential to the future of the Navy...we cannot rely on a few highly trained technicians to lead us into new technology. The face of the Navy changes too slowly from the prodding of a few brilliant individuals, be they ensigns or admirals. It requires a broad base of early comprehension to move significant programs and this broad base of comprehension can only come from a broad base of education.

It is not the degree itself but the learning and knowledge acquired in getting the degree which is necessary in order to be fully qualified for technical and managerial assignments.

[T]he special value of that year [war college] to me was the opportunity to be with Army and Air Force officers and with foreign service people and find out a little about their earlier education and training and their views and motivations. I found that I ran into many of these contacts later and it always seemed to me the earliest friendships and the mutual understanding they fostered really helped in the inter-service arena.

C. MANAGEMENT FUNCTIONS (APPENDICES G THROUGH I)

1. Format

The original hypotheses were that management function performance should not vary by designator but should vary by pay grade. The criterion for nonvariance was a statistical significance level of .10 or better. Appendices H and I contain the results of the ANOVA procedure used to analyze the 28 management functions defined in Appendix G. Appendix H contains the results for the ANOVA procedure by designator for pay grades O-3, O-4, and O-5. It also illustrates the percentage of officers (by pay grade and designator) who perform each management function. Appendix I contains the results and percentages by pay grade alone.

2. Overview

There were mixed results for the designator hypothesis. As pay grade increased, so did the number of management functions which varied by designator. At the lieutenant level, seven functions varied by extent and five by level of complexity; at the lieutenant commander level, eight varied by extent and nine by complexity; and at the commander

level, 12 varied by extent and 13 by complexity. When the designators were aggregated and variance was tested by pay grade alone, six management functions varied by extent of performance and four by level of complexity. Although the ANOVA procedure did not produce the type of results to support the pay grade hypothesis, examining the percentages of officers performing each function did indicate some trends.

3. Core Functions

Reviewing the percentages of officers performing each function produced a list of eight common core functions. These were functions which had 90 percent or more of each pay grade performing the management function. For the most part, they sound very similar to the functions discussed in Chapter II: work scheduling, activity planning, coordinating, oral and written communication, interacting, advising, and using equipment and devices.

4. Upward Trends

There were several management functions which showed a steady increase in percentage performing as the pay grade increased. Allan (1981) discussed trends in task performance as managerial level increased. The areas he found significant differences in at the higher levels were preparation of or recommendations for agency objectives and programs, coordination of major activities, identifying funding resources, approving major expenditures, hiring and firing personnel, and acting as spokespersons. These task areas were very similar to the OSI function areas which had increased percentages performing at the higher pay grades: planning future development, budgeting, judgments involving

fiscal resources, manpower planning, service interaction, representing, and public affairs activities.

The types of activities listed are those involving strategic planning, resource allocation, and representation. They are either long term in nature or require the presence of someone who will act on behalf of the organization or constituency. They are also very indicative of Mintzberg's roles of Resource Allocator, Figurehead, Negotiator, and Spokesperson. It was interesting to note the increased levels of U.S. and foreign service interaction (possibly related to the increase in the representing function) as the pay grade increased. This gives credence to the DoD policy of joint duty billet designation beginning at the O-4 level.

5. Downward Trends

There were only two management functions which had decreasing percentage trends as pay grade increased. The first dealt with inspections. While there is no clear-cut reason why this decreased as pay grade increased, it may be linked to type of activity assignment. Operational surface, subsurface, and aviation commands are exposed to a continuous stream of inspections, many of which do not have a shore-based equivalent. In this sample, lieutenants had greater percentages of officers attached to the operational commands than the lieutenant commanders and commanders.

The other management function which decreased in percent performing as pay grade increased was the instruction of others. This function may be left to the more junior officers (lieutenants and below) who have more direct contact with their subordinates. Another

explanation might be that more-senior pay grades directly supervise more-experienced (higher ranking) personnel, who require less job instruction.

6. Summary

The use of the ANOVA procedure was a broad-based first attempt at analyzing the management functions. The data used in the analyses do not give an indication of what is causing the change in mean behavior. Some of the variation may be due to type of activity representation or the number and type of people supervised. Based on the results, there were both commonalities and differences among the pay grade levels which were similar to those cited for civilian managerial levels in previous literature. These help point the direction for future research.

D. WORKING HOURS

1. Aggregate Work Week

The median weekly work hours while in port or assigned to a shore base ranged between 52 and 55 hours by pay grade; when deployed it ranged between 90 and 105 hours by warfare pay grade. The GENURL community had only six officers who deployed, and all of them were lieutenants. Three were stationed with VP squadrons, one was at an overseas detachment, one with a Mobile Construction Battalion, and one on a destroyer.

2. Watch Standing and Collateral Duties

The median time spent on watch decreased as pay grade increased, and larger percentages of lieutenant commanders and

commanders stood no watches at all when stationed on shore. Time spent on collateral duties also decreased as pay grade increased and, as a general rule, all officers spent more time on job-related collateral duties than on those which were not job related.

3. Meetings

Median weekly time spent in meetings ranged between 6 and 7.5 hours and increased as pay grade increased. This would indicate that the more senior managers spend slightly more time acting as disseminators and monitors of information.

4. Military Social Requirements

The median monthly time (four hours) spent on military social requirements did not change by pay grade. A closer look was taken at all officers who reported more than 10 hours per month. While some of the respondents were in figurehead-related jobs (commanding officers, executive officers, and flag aides), many were not. Stewart (1967) suggested there might be a link between number of subordinates and social requirements.

5. Professional Development

Median time spent on professional development decreased slightly as pay grade increased. It was not clear whether this was solely a function of pay grade or whether it might also be related to type of activity assignment. The officers in operational billets may spend more time working on qualifications than their shore-based counterparts.

6. Physical Fitness Activities

When the OSI was being developed, a working group of officers was gathered to discuss additional items which merited inclusion in the survey. There was general consensus that physical fitness activities should be included because meeting semi-annual physical readiness standards was a military job requirement. The Health and Physical Readiness Division of the Naval Military Personnel Command (NMPC-68) provided questions which were derived from a Navy-wide, longitudinal study (Naval Health Research Center, 1987).

Respondents were asked to answer "yes" or "no" to whether their command policy allowed time for physical fitness activities during working hours. The responses ranged from 62 percent affirmative for those on submarines and surface ships to 80 percent for those at shore activities. When asked to rate whether they had enough time during working hours for PT, 25 percent of the submariners answered positively (a score between four and six on a six-point scale), as opposed to 29 percent of those on surface vessels, 54 percent in aviation squadrons, and 59 percent of those at shore activities. (Survey sampling was not stratified by activity type, so these figures may not be wholly representative of those stationed on ships, submarines, in aviation squadrons, or at other shore activities.)

All pay grades generally spent more time performing cardiovascular exercise during nonworking hours than while at work, and the lieutenants spent more time on exercise in general. For the most part, the reason for performing the exercise was not tied to a physical strength job

requirement, with the exception of the aviators. They answered with significantly higher percentages of affirmative responses when asked if their job required a score greater than a "satisfactory" on the physical readiness test. Between the aviation communities, the pilots indicated a greater need for a higher level of physical fitness than their NFO counterparts.

The pilots were also the most physically fit, judging from the scores on their most recent physical fitness test. Fifty percent of the O-3 pilots and 43 percent of both O-4 and O-5 pilots scored an "outstanding" on the test. While the rest of the communities had lower percentages, it was clear that their performance was not geared to physical strength job requirements. The majority scored well above a "satisfactory" on the test.

7. Summary

The questions on weekly and monthly work activities were not meant to be all-inclusive but to give a flavor of the types of functions occurring during the work week. It is clear that there are some differences by pay grade, but the differences by designator were less obvious. The strongest message illustrated by the data was the substantial increase in working hours when the officer, no matter what his or her designator, is deployed.

V. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

Occupational analysis is comprised of both objective and subjective measures of performance, both of which are present in this thesis. In the area of billet classification and officer assignment, only three measures were examined: grade, designator, and NOBC code. There were others equally useful (e.g., billet subspecialty code and AQD code) which were not scrutinized because they would have required additional information from the Officer Master File.

The classification system is a complex, interwoven grouping of subset coding systems. There are 643 billet and 894 officer AQD codes, 699 NOBC codes, 143 billet and 121 officer designators, and an estimable combination of subspecialty codes (which are mixed and matched by 15 functional areas, 255 education/training areas, and 19 alphabetic suffixes). Yet, one problem with relying on the classification coding system for information is that it does not give a complete profile of previous experience and performance. These are useful tools to have when matching billets and people but may only be available in a narrative form. This is particularly true when commands are not vigilant enough in updating their manpower documents as duties and billet requirements change or the system responsible for acknowledging changes in officer qualifications breaks down.

As this was a maiden voyage toward discovery of what Navy URL managers do in their jobs, there was little prior military research available. Therefore, it was important to examine the information on a basic level before aggregating it through factor or principal component analysis or some other method which would lose some of the individual flavor of the management functions. Having done this, the results were not as clear-cut as desired, although some pay grade performance trends emerged. There are certainly many other avenues of research which can be used to further examine the data.

B. RECOMMENDATIONS FOR FUTURE RESEARCH

The first recommendation would be to aggregate the management functions and determine what types of patterns emerge. A behavioral model of these management factors could be developed which might include pay grade, designator, education, and number of personnel working for each individual. This could give further insight into why there is variation in performance between the designators.

Because the frequency counts for most of the job titles are so small, there would be problems trying to do extensive research with the small samples. Three notable exceptions to the small sample size are the quantities of commanding officers, executive officers, and officers in charge. There are 204 commanding officers, 201 executive officers and 182 officers in charge represented in the overall sample. Comparing their managerial behavior would be an interesting undertaking and might provided useful information for the courses taught to prospective commanding and executive officers.

C. FINAL COMMENTS

It would be interesting to update John Paul Jones' definition of a well-rounded naval officer based on the OSI survey results. The first requirement to go would be the need for a foreign language. The percentage of officers using a second language and the extent of performance indicated this was the least applicable trait in today's Navy. A better definition might be retired ADM Charles D. Griffin's comments in the *Naval Officer Professional Development Study* (1974, p. I-D-25), slightly modified by this thesis author:

> Who is the well rounded officer? At the risk of over-simplification I believe it is the one who has performed at sea [career path permitting] and ashore in various command and staff billets and who has completed his [or her] share of academic and professional education.[7]

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[7]Thesis author's modifications are in brackets.

APPENDIX A

COMPARISON OF INCUMBENT GRADE WITH BILLET GRADE BY CATEGORY PERCENTAGE

TABLE A-1

LIEUTENANTS (O-3)

Designator	n	Billet Grade Lower	Same	Higher
1100	135	12.5	70.4	17.1
1110	86	17.5	77.9	4.7
1120	124	5.6	79.8	14.5
1310	110	13.6	83.6	2.7
1320	87	9.1	78.2	12.6

TABLE A-2

LIEUTENANT COMMANDERS (O-4)

Designator	n	Billet Grade Lower	Same	Higher
1100	50	24.0	70.0	6.0
1110	43	14.0	79.1	7.0
1120	52	3.8	76.9	19.2
1310	60	18.4	76.7	5.0
1320	74	9.5	87.8	2.7

TABLE A-3

COMMANDERS (O-5)

Designator	n	Billet Grade Lower	Same	Higher
1100	12*	25.0	58.3	16.7
1110	32	6.2	89.5	6.3
1120	32	9.4	90.6	0.0
1310	51	7.8	92.2	0.0
1320	33	6.1	93.9	0.0

*small sample size

APPENDIX B

COMPARISON OF INCUMBENT DESIGNATOR WITH BILLET DESIGNATOR BY CATEGORY PERCENTAGE

TABLE B-1

LIEUTENANTS (O-3)

Designator	Invalid Desig.	1000	1050	1160 or 1110	1120	130X or 131X	130X or 132X	Other Valid Desig.
1100 n=135	17.0	64.4						18.5
1110 n=86	7.0	10.5	1.2	74.4				7.0
1120 n=124	4.0	4.8	0.8		89.5			0.8
1310 n=110	14.5	2.7	0.9			75.4		6.3
1320 n=87	1.1	6.9	4.6				73.6	13.8

TABLE B-2

LIEUTENANT COMMANDERS (O-4)

Designator	Invalid Desig.	1000	1050	1160 or 1110	1120	130X or 131X	130X or 132X	Other Valid Desig.
1100 n=50	12.0	72.0						16.0
1110 n=43	4.7		7.0	83.7				4.7
1120 n=52	1.9	1.9			96.2			
1310 n=60	1.7	5.0	3.3			78.3		11.7
1320 n=74		10.8	2.7				64.9	21.6

TABLE B-3

COMMANDERS (O-5)

Designator	Invalid Desig.	1000	1050	1160 or 1110	1120	130X or 131X	130X or 132X	Other Valid Desig.
1100 n=12*		91.7						8.3
1110 n=32	3.1	15.6	18.8	62.5				
1120 n=32					100.0			
1310 n=51	5.9	9.8	7.8			72.5		4.0
1320 n=33	3.0	21.2	9.1				54.5	12.1

All entries in columns other than "Invalid Desig." or "Other Valid Desig." reflect billet designators which can be considered a match to the officers' designators.

*small sample size

APPENDIX C

COMPARISON OF SELF-REPORTED JOB TITLE WITH BILLET CLASSIFICATION CODE BY CATEGORY PERCENTAGE

	n	Two Jobs	Correct	Associated	Incorrect	Invalid
O-3						
1100	135	40.7	40.7	22.2	28.1	8.9
1110	86	24.4	47.7	22.1	18.6	11.6
1120	124	38.7	48.3	29.8	8.1	13.7
1310	110	73.6	29.1	17.3	19.1	34.5
1320	87	59.8	42.5	16.1	24.1	17.2
O-4						
1100	50	28.0	58.0	22.0	16.0	4.0
1110	43	48.8	53.5	20.9	16.3	9.3
1120	52	40.4	63.5	7.7	25.0	3.8
1310	60	75.0	48.3	18.3	21.7	11.7
1320	74	58.1	28.4	23.0	10.8	58.1
O-5						
1100	12	25.0	58.2	8.3	25.0	8.3
1110	32	28.1	43.8	21.9	25.0	9.4
1120	32	15.6	71.9	12.5	12.5	3.1
1310	51	62.7	56.9	17.6	17.6	7.8
1320	33	45.4	33.3	30.3	36.4	0.0

Two Jobs = percentage of officers who responded that they had two primary job titles

Correct = percentage of officers whose job title matched the NOBC title

Associated = percentage of officers whose job title was associated with the NOBC title

Incorrect = percentage of officers whose job title was neither matched nor associated with a valid NOBC code

Invalid = percentage of officers whose billet was coded with an invalid NOBC code

APPENDIX D

COMPARISON OF UNDERGRADUATE FIELD OF STUDY BY PAY GRADE AND DESIGNATOR CATEGORY PERCENTAGE

TABLE D-1

LIEUTENANTS (O-3)

Designator	n	SOSCI	MSCI	BUS	OPS	EDUC	HIST	Total % Reflected
1100	135	27.4	19.3	16.3				63.0
1110	86	15.1	41.9	17.4				74.4
1120	124	3.2	88.7	3.2				95.1
1310	108	10.2	48.1	16.1				74.4
1320	87	13.8	52.9	16.1				82.8

TABLE D-2

LIEUTENANT COMMANDERS (O-4)

Designator	n	SOSCI	MSCI	BUS	OPS	EDUC	HIST	Total % Reflected
1100	50	20.0	26.0			16.0		62.0
1110	42	21.4	50.0	11.9				83.3
1120	51		86.3	3.9	7.8			98.0
1310	59	20.3	55.9	10.2				86.4
1320	74	10.8	39.2	28.4				78.4

TABLE D-3

COMMANDERS (O-5)

Designator	n	SOSCI	MSCI	BUS	OPS	EDUC	HIST	Total % Reflected
1100	12		16.7			33.3	25.0	75.0
1110	32	21.9	43.8	15.6				81.3
1120	31	6.5	90.3	3.2				100.0
1310	51	11.8	56.9	11.8				80.5
1320	33	15.2	36.4	21.2				72.8

These tables reflect the top three major fields of study for each of the designators by pay grade. The last column sums the row and indicates the percentage of the sample captured by the three top fields of study.

SOSCI = Social and Behavioral Science
MSCI = Mathematics and Science
BUS = Business/Management
OPS = Operations
EDUC = Education
HIST = History and Area Studies

APPENDIX E

COMPARISON OF HIGHEST LEVEL OF EDUCATION COMPLETED BY DESIGNATOR AND PAY GRADE CATEGORY PERCENTAGE

TABLE E-1

LIEUTENANTS (O-3)

Designator	n	High School	Bachelor's	Master's	Post-Master's	Doctoral
1100	135		74.1	22.2	3.7	
1110	86		90.7	9.3		
1120	123		91.9	7.3	0.8	
1310	105		93.3	5.7		1.0
1320	87		88.5	11.5		

TABLE E-2

LIEUTENANT COMMANDERS (O-4)

Designator	n	High School	Bachelor's	Master's	Post-Master's	Doctoral
1100	49		38.8	44.9	9.5	2.0
1110	42		42.9	47.6	9.5	
1120	52		78.8	15.4	5.8	
1310	58		65.5	31.0	3.4	
1320	73	1.4	49.3	46.6	2.7	

TABLE E-3

COMMANDERS (O-5)

Designator	n	High School	Bachelor's	Master's	Post-Master's	Doctoral
1100	12		33.3	58.3	8.3	
1110	32		43.8	43.8	12.5	
1120	32		68.8	31.3		
1310	51		56.9	41.2	2.0	
1320	33		39.4	57.6	3.0	

TABLE E-4

ALL OFFICERS BY PAY GRADE

Grade	n	High School	Bachelor's	Master's	Post-Master's	Doctoral
O-3	536		86.9	11.8	1.1	0.2
O-4	274	0.4	55.5	37.7	6.6	0.4
O-5	160		51.3	46.4	4.4	

APPENDIX F

PROFESSIONAL MILITARY EDUCATION COMPLETION BY PAY GRADE AND DESIGNATOR CATEGORY PERCENTAGE

TABLE F-1

INTERMEDIATE SERVICE COLLEGE

	n	Percent Completion*
O-3 Designator		
1100	135	0.7
1110	86	1.2
1120	124	
1310	110	1.8
1320	87	1.1
O-4 Designator		
1100	50	18.0
1110	43	9.3
1120	52	
1310	60	6.7
1320	74	16.2
O-5 Designator		
1100	12	41.7
1110	32	15.6
1120	32	3.1
1310	51	21.6
1320	33	12.1

*Lieutenants are only eligible to complete intermediate service college through the off-campus program.

TABLE F-2

SENIOR SERVICE COLLEGE

O-5 Designator	n	Percent Completion**
1100	12	8.3
1110	32	12.5
1120	32	
1310	51	3.9
1320	33	

**One 1100 and one 1110 officer indicated they had completed both intermediate- and senior-level service colleges

APPENDIX G

DEFINITIONS OF MANAGEMENT FUNCTIONS[8]

A. PLANNING AND SCHEDULING

1. Planning and Scheduling

Developing schedules or work plans (including your own), assigning tasks to workers, and specifying goals and completion dates.

2. Budgeting

Developing plans for future expenses. Includes phasing of costs and setting of priorities for allocation of funds.

3. Manpower Planning

Determining billet or personnel requirements, planning personnel resource utilization, coding billets, maintaining manpower authorization documents, and performing other related manpower activities.

4. Activity Planning

Planning for the ongoing operation of a program or organizational unit.

5. Inspections

Planning, preparing for, or participating in inspections (includes follow-up action on inspection results).

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[8]Two management functions developed by NODAC were not included in this thesis because they were too highly correlated to the incumbents' duty assignments. These functions were civilian manpower management and predeployment planning.

6. Planning Future Development

Anticipating requirements and making strategic decisions regarding the future development of a program, project, activity or organization l unit.

B. PROCESSING INFORMATION AND IDEAS

1. Processing Information and Ideas

Converting or preparing data for use, utilizing basic information-handling processes. Includes compiling, summarizing, transcribing, classifying, categorizing, or coding information (includes hand- and computer-generated information).

2. Quantitative Processing of Information and Data

Processing information or data using some type of quantitative or mathematical method.

3. Analyzing and Synthesizing Information and Ideas

Breaking down information into facts, principles, or assumptions; interpreting the results; and integrating information to establish new facts, hypotheses, or theories.

4. Application of Military Law

Applying, interpreting, and enforcing military law and regulations (includes all administrative, investigative, judicial and non-judicial proceedings).

5. Contract Administration

Includes all actions involved in establishing contracts to acquire property or services by purchase or lease, the administration of contract terms, and modifications to or termination of contracts.

C. EXERCISING JUDGMENT

1. Judgments Involving People

Making decisions or assessments about people. This includes superiors, peers, and subordinates within your command and those you work with outside your command.

2. Judgments Involving Operations and Objects

Making decisions or assessments about programs, operation of an organization, facilities, or equipment which do not directly involve decisions about people.

3. Judgments Involving Fiscal Resources

Making decisions, solving problems, or evaluating the use of money or capital.

D. COMMUNICATING

1. Oral Communication

Communicating work-related information to others by talking.

2. Written Communication

Communicating work-related information using written materials (e.g., correspondence, messages, instructions, etc.).

3. Foreign Language Usage

Communicating oral or written work-related information by using a foreign language.

E. INTERPERSONAL ACTIVITIES/RELATIONSHIPS

1. Supervising and Directing

Delineating subordinates' responsibilities and reviewing their work.

2. Instructing

Teaching, lecturing, training, etc., in a formal classroom or informal, on-the-job (OJT) environment.

3. Coordinating

Establishing and sustaining relationships and interchanging information aimed at helping to achieve job objectives.

4. Interacting

Conducting purposeful discussions with others in order to exchange or gather information for a particular reason.

5. U.S. Interservice Interaction

Interacting with other U.S. military services (Army, Air Force, Marine Corps and Coast Guard). This applies to all jobs, not just designated joint service billets.

6. Foreign Military Interaction

Interacting with military branches of a foreign service. This applies to all jobs, not just designated joint service billets.

7. Advising

Giving counsel based on your professional background (includes your education, training, prior experience, etc.).

8. Representing

Acting as a representative for the services, products, or points of view of a command, staff organization, country, or other special interest group.

9. Public Affairs Activities

Conducting public affairs activities such as speaking to public groups (military and/or civilian), addressing news media, writing or providing written material to the press, etc.

F. TECHNICAL ACTIVITIES

1. Using Equipment and Devices

Using mechanical, electrical, electronic, or physical devices.

2. Using Procedures, Techniques, or Processes

Using procedures, techniques, or processes in a verbal, mathematical, or other systematic approach to a problem or action.

APPENDIX H

ANALYSIS OF VARIANCE OF MANAGEMENT FUNCTIONS BETWEEN DESIGNATORS FOR PAY GRADES O-3 THROUGH O-5

TABLE H-1

PLANNING AND SCHEDULING

1. Work Scheduling

	Percentage Performing[1]					Significance Level	
						Extent[2]	Complexity[3]
GRD	1100	1110	1120	1310	1320	F	F
O-3	92.5	96.5	97.6	97.2	98.9	.33	.07**
O-4	100.0	100.0	100.0	98.3	95.9	.00*	.00*
O-5	100.0	100.0	100.0	96.1	100.0	.02*	.01*

2. Budgeting

	Percentage Performing					Significance Level	
						Extent	Complexity
GRD	1100	1110	1120	1310	1320	F	F
O-3	71.4	70.6	39.0	51.4	57.5	.00*	.00*
O-4	88.0	81.4	71.2	83.3	79.5	.00*	.34
O-5	66.7	96.9	84.4	88.2	87.9	.02*	.14

3. Manpower Planning

	Percentage Performing					Significance Level	
						Extent	Complexity
GRD	1100	1110	1120	1310	1320	F	F
O-3	65.9	72.9	72.4	74.1	67.8	.35	.09**
O-4	94.0	79.1	84.6	80.0	74.3	.74	.64
O-5	72.7	84.4	81.2	86.3	93.9	.44	.38

4. Activity Planning

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	85.2	89.4	91.9	92.7	92.0	.34	.02*
O-4	96.0	100.0	96.2	96.7	91.9	.00*	.00*
O-5	83.3	96.9	93.7	92.2	97.0	.39	.00*

5. Inspections

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	84.4	87.2	95.9	94.5	87.1	.008	.00*
O-4	96.0	83.7	96.2	86.7	79.7	.00*	.00*
O-5	72.7	75.0	90.6	78.4	78.8	.00*	.00*

6. Planning Future Development

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	78.5	75.6	78.9	82.7	83.9	.09**	.14
O-4	94.0	90.5	86.3	88.3	85.1	.70	.49
O-5	83.3	90.6	90.6	92.2	80.1	.38	.38

TABLE H-2

PROCESSING INFORMATION AND IDEAS

1. Processing Information and Ideas

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	89.6	90.7	89.3	89.1	82.0	.07**	.36
O-4	92.0	93.0	90.2	96.7	93.2	.18	.21
O-5	91.7	90.6	81.2	82.0	90.9	.30	.55

2. Quantitative Processing of Information and Ideas

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	76.9	77.9	70.2	70.0	79.3	.80	.53
O-4	72.0	81.4	84.0	85.0	76.7	.04*	.05*
O-5	75.0	78.1	78.1	64.7	72.7	.98	.94

3. Analyzing and Synthesizing Information and Ideas

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	82.8	89.5	87.0	83.2	89.7	.06**	.00*
O-4	94.0	100.0	96.1	85.0	83.8	.00*	.00*
O-5	83.3	83.9	100.0	96.1	100.0	.00**	.00*

4. Application of Military Law

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	78.5	82.5	77.4	80.9	71.3	.04*	.01*
O-4	80.0	62.8	82.4	81.7	69.9	.00*	.03*
O-5	58.3	62.5	90.6	68.6	75.8	.07**	.00*

5. Contract Administration

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	31.1	22.1	13.8	14.5	24.1	.01*	.01*
O-4	40.0	18.6	23.5	26.7	28.8	.10**	.65
O-5	25.0	18.7	18.7	33.3	36.4	.10**	.04*

TABLE H-3

EXERCISING JUDGMENT

1. Judgments Involving People

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	92.5	96.5	96.0	99.1	96.5	.17	.01*
O-4	98.0	95.3	98.0	98.3	93.2	.08**	.01*
O-5	83.3	90.6	100.0	96.0	93.9	.01*	.02*

2. Judgments Involving Operations and Objects

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	82.7	88.4	90.8	92.7	90.8	.01*	.04*
O-4	94.0	100.0	98.0	89.8	89.2	.00*	.00*
O-5	81.8	87.5	100.0	94.1	87.9	.23	.08**

3. Judgments Involving Fiscal Resources

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	71.6	75.6	48.8	53.6	60.9	.00*	.00*
O-4	92.0	81.3	68.6	88.3	82.4	.01*	.18
O-5	83.3	100.0	84.4	84.3	87.9	.03*	.23

TABLE H-4

COMMUNICATING

1. Oral Communications

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	100.0	100.0	99.2	100.0	98.9	.46	.00*
O-4	100.0	100.0	100.0	98.3	100.0	.02*	.00*
O-5	100.0	100.0	100.0	98.0	96.9	.00*	.90

2. Written Communications

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	100.0	100.0	100.0	99.1	98.9	.01*	.16
O-4	100.0	100.0	100.0	100.0	98.6	.01*	.00*
O-5	100.0	100.0	93.7	96.1	96.9	.83	.35

3. Foreign Language Usage

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	8.1	14.0	7.3	14.5	21.8	.04*	.00*
O-4	2.0	18.6	5.9	15.3	20.5	.02*	.03*
O-5	16.7	9.4	15.6	15.7	12.5	.93	.54

TABLE H-5

INTERPERSONAL ACTIVITIES/RELATIONSHIPS

1. Supervising and Directing

	Percentage Performing					Significance Level	
						Extent	Complexity
GRD	1100	1110	1120	1310	1320	F	F
O-3	86.6	88.2	95.2	90.9	93.1	.00*	.00*
O-4	92.0	92.9	86.5	96.6	87.8	.19	.10**
O-5	75.0	96.9	93.7	86.3	87.5	.01*	.01*

2. Instructing

	Percentage Performing					Significance Level	
						Extent	Complexity
GRD	1100	1110	1120	1310	1320	F	F
O-3	80.0	91.7	93.5	92.7	95.4	.00*	.00*
O-4	70.0	83.3	96.1	85.0	70.3	.00*	.00*
O-5	33.3	75.0	96.9	80.4	81.8	.00*	.00*

3. Coordinating

	Percentage Performing					Significance Level	
						Extent	Complexity
GRD	1100	1110	1120	1310	1320	F	F
O-3	97.0	97.7	96.0	97.3	97.7	.00*	.05*
O-4	100.0	97.6	100.0	100.0	97.3	.98	.24
O-5	100.0	96.9	100.0	98.0	100.0	.01*	.27

4. Interacting

	Percentage Performing					Significance Level	
						Extent	Complexity
GRD	1100	1110	1120	1310	1320	F	F
O-3	99.3	98.8	97.6	99.1	98.9	.04*	.06**
O-4	100.0	100.0	98.0	100.0	100.0	.09**	.04*
O-5	91.7	100.0	100.0	100.0	97.0	.05*	.37

5. U.S. Interservice Interaction

	Percentage Performing					Significance Level	
						Extent	Complexity
GRD	1100	1110	1120	1310	1320	F	F
O-3	69.6	64.7	32.5	72.7	73.6	.00*	.00*
O-4	62.0	64.3	49.0	81.7	76.7	.00*	.00*
O-5	83.3	90.6	54.8	88.2	93.9	.00*	.00*

6. Foreign Military Interaction

	Percentage Performing					Significance Level	
						Extent	Complexity
GRD	1100	1110	1120	1310	1320	F	F
O-3	27.4	44.2	26.8	62.7	54.0	.00*	.00*
O-4	38.0	61.9	38.5	61.7	56.9	.13	.03*
O-5	33.3	62.5	62.5	62.7	72.7	.08**	.33

7. Advising

	Percentage Performing					Significance Level	
						Extent	Complexity
GRD	1100	1110	1120	1310	1320	F	F
O-3	91.9	94.2	95.2	93.6	94.3	.46	.17
O-4	98.0	95.3	96.0	98.3	93.2	.07**	.24
O-5	100.0	96.9	100.0	94.1	100.0	.04*	.38

8. Representing

	Percentage Performing					Significance Level	
						Extent	Complexity
GRD	1100	1110	1120	1310	1320	F	F
O-3	72.3	69.8	55.3	77.1	77.0	.00*	.00*
O-4	74.0	86.0	66.7	75.0	78.1	.11	.03*
O-5	83.3	93.7	77.4	90.2	93.9	.11	.07**

9. Public Affairs Activities

GRD	Percentage Performing					Significance Level	
	1100	1110	1120	1310	1320	Extent F	Complexity F
O-3	51.1	60.5	39.8	69.1	62.1	.00*	.00*
O-4	44.0	54.8	43.1	66.7	61.6	.26	.15
O-5	50.0	59.4	78.1	72.5	60.5	.42	.09**

TABLE H-6

TECHNICAL ACTIVITIES

1. Using Equipment and Devices

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	91.9	91.9	94.3	95.5	98.9	.00*	.00*
O-4	88.0	88.4	90.2	93.3	90.5	.00*	.00*
O-5	66.7	87.5	100.0	94.1	97.0	.00*	.00*

2. Using Procedures, Techniques, or Processes

GRD	Percentage Performing 1100	1110	1120	1310	1320	Significance Level Extent F	Complexity F
O-3	87.3	93.3	91.9	99.1	94.3	.00*	.00*
O-4	94.0	95.2	98.0	96.7	93.2	.00*	.00*
O-5	58.3	90.6	100.0	86.3	96.9	.00*	.00*

[1]Percentage performing was derived by dividing the number of non-zero responses for each function by the total number of respondents. Sample sizes for the designators are given in the following parentheses and are for O-3, O-4, and O-5, respectively:

1100	(135, 50, 12)	1310	(110, 60, 51)
1110	(86, 43, 32)	1320	(87, 74, 33)
1120	(124, 52, 32)		

[2]Extent = How significant the management function is in the incumbent's current job.

[3]Complexity = Typical level of complexity of the management function

*Indicates .05 or better significance level for ANOVA test for sample means.

**Indicates between .06 and .10 significance level for ANOVA test for sample means.

APPENDIX I

ANALYSIS OF VARIANCE OF MANAGEMENT FUNCTIONS FOR PAY GRADES O-3 THROUGH O-5

TABLE I-1

PLANNING AND SCHEDULING

	Percentage Performing[1]			Significance Level	
				Extent[2]	Complexity[3]
Management Function	**O-3**	**O-4**	**O-5**	**F**	**F**
Work Scheduling	96.2	98.6	98.6	.00*	.00*
Budgeting	57.5	80.6	87.5	.00*	.00*
Manpower Planning	70.4	81.7	85.5	.00*	.00*
Activity Planning	90.0	95.7	93.8	.00*	.00*
Inspections	90.0	87.8	79.9	.04*	.07**
Planning Future Development	79.8	88.4	90.0	.00*	.00*

TABLE I-2

PROCESSING INFORMATION AND IDEAS

	Percentage Performing			Significance Level	
				Extent	Complexity
Management Function	**O-3**	**O-4**	**O-5**	**F**	**F**
Processing Information and Ideas	90.0	93.2	86.2	.29	.00*
Quantitative Processing of Information and Ideas	74.5	80.3	72.5	.55	.01*
Analyzing and Synthesizing Information and Ideas	86.0	90.6	94.3	.00*	.00*
Application of Military Law	78.2	75.4	72.5	.02*	.04*
Contract Administration	21.2	27.8	27.5	.20	.11

TABLE I-3

EXERCISING JUDGMENT

Management Function	Percentage Performing O-3	O-4	O-5	Significance Level Extent F	Complexity F
Judgments Involving People	95.9	96.4	94.3	.02*	.00*
Judgments Involving Operations and Objects	89.0	93.2	91.8	.00*	.00*
Judgments Involving Fiscal Resources	61.7	82.7	88.1	.00*	.00*

TABLE I-4

COMMUNICATING

Management Function	Percentage Performing O-3	O-4	O-5	Significance Level Extent F	Complexity F
Oral Communications	99.6	99.6	98.7	.71	.00*
Written Communications	99.6	99.6	96.8	.00*	.00*
Foreign Language Usage	12.4	13.0	13.9	.82	.93

TABLE I-5

INTERPERSONAL ACTIVITIES/RELATIONSHIPS

Management Function	Percentage Performing O-3	O-4	O-5	Significance Level Extent F	Complexity F
Supervising and Directing	90.7	90.9	89.3	.93	.27
Instructing	89.8	80.4	79.4	.00*	.05*
Coordinating	97.0	98.9	98.7	.00*	.00*
Interacting	98.7	99.6	98.8	.00*	.00*
U.S. Interservice Interaction	61.7	68.1	83.0	.00*	.00*
Foreign Military Interaction	41.4	51.8	62.5	.00*	.00*
Advising	93.7	96.0	96.2	.00*	.00*
Representing	69.8	75.8	88.7	.00*	.00*
Public Affairs Involvement	55.5	55.1	66.9	.00*	.00*

TABLE I-6

TECHNICAL ACTIVITIES

Management Function	Percentage Performing O-3	O-4	O-5	Significance Level Extent F	Complexity F
Using Equipment and Devices	94.3	90.3	92.5	.01*	.81
Using Procedures, Techniques, or Processes	92.8	95.3	89.9	.08**	.02*

[1]Percentage performing was derived by dividing the number of non-zero responses for each function by the total number of respondents. Sample sizes for the designators are given in the following parentheses and are for O-3, O-4, and O-5, respectively:

1100 (135, 50, 12)
1110 (86, 43, 32)
1120 (124, 52, 32)
1310 (110, 60, 51)
1320 (87, 74, 33)

[2]Extent = How significant the management function is in the incumbent's current job.

[3]Complexity = Typical level of complexity of the management function

*Indicates .05 or better significance level for ANOVA test for sample means.

**Indicates between .06 and .10 significance level for ANOVA test for sample means.

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